

Souvenir Catalogue
of
Photographs in
Engineering Hall

Compliments of
CIVIL ENGINEERING DEPARTMENT
UNIVERSITY OF ILLINOIS

Illinois Student Engineering Exhibit
May 6, 1939

Supplement of Additions and Changes

APRIL 5, 1941

FIRST FLOOR

Removed: 21

Added:

146. Map of the Panama Canal Zone.

147. Bartlett Dam near Phoenix, Arizona. The highest multiple-arch dam in the world, 270 feet high.

148. View of Bartlett Dam.

154. Buchanan Dam in Texas. Multiple arch dam for power and flood control purposes.

SECOND FLOOR

Removed: 42, 43. To third floor: 64. To fourth floor: 56, 57, 58, 59.

Added: 124 from fourth floor.

138. Relief Map of the United States.

139. View of the San Francisco-Oakland Bay Bridge.

140. View of the San Francisco-Oakland Bay Bridge.

141. San Gabriel Dam under construction near Los Angeles, California. Highest earth and rock dam in the world, 375 feet high.

142. Pardee Dam for the Oakland-Metropolitan water district. 358 feet high. Contains 222,000 acre feet of storage.

143. View of construction on 79th Street Filtration Plant, Chicago, Illinois.

145. Exchequer Dam. Power and irrigation dam in the central valley of California. 226 feet high. Reservoir of 289,000 acre feet of water.

150. View of docks and piers in New York Harbor.

151. View of Docks in New York Harbor.

152. Two-hinged rib arch highway bridge. Vermont.

153. View of the trans-Atlantic ship Queen Mary entering New York harbor.

THIRD FLOOR

Removed: 75, 77, 86, 94.

Added: 64 from second floor.

131. San Francisco-Oakland Bay Bridge from San Francisco.

132. False, corbel arch used by early Mexican civilization.

133. The Diablo development on the Skagit River in Washington.

134. George Westinghouse Bridge near Pittsburgh, Penna. The largest reinforced-concrete span in U. S., 460 foot span.

135. View of Boulder Dam. Storage capacity of 30 million acre feet, or enough water for every person in the world to have 5,000 gallons.

136. Upper Mississippi river and St. Paul and Minneapolis bridges.

137. Old Print of the first High Bridge over the Harlem river. Built about 1840 as an aqueduct.

149. Hammerhead cranes and outlet pipes used in the construction of Grand Coulee Dam.

FOURTH FLOOR

Removed: 109, 113, 116. 124 to second floor.

Added: 56, 57, 58, 59 from second floor.

125. View of the construction of Grand Coulee Dam.

126. Point Bridge in Pittsburgh, Penna. at junction of Monongahela and Allegheny rivers.

127. Hammerhead cranes used in construction of Grand Coulee Dam.

128. Golden Triangle in Pittsburgh. Junction of the Monongahela and Allegheny rivers.

129. The highest suspension bridge in the world across the Royal Gorge in Colorado, 1052 feet above the water.

130. The Tri-Borough and Hell Gate Bridges in New York City as seen from Queens.

Catalogue of Photographs in Engineering Hall

University of Illinois

First Floor

1. Shoshone Canyon Dam, Wyoming. Shoshone Lake, formed by the Dam, in the background. The highway on the edge of the lake appears in photograph number 2.
2. Highway on the edge of Shoshone Lake, Wyoming.
3. Highway in the Shoshone Canyon, Wyoming.
4. Cloverleaf highway intersection. Built in 1929 by the New Jersey Highway Department at the intersection of State Routes 4 and 25. Thru traffic is protected by grade separation. Right turns use outer "Y" curves. Left turns pass through the grade separation and then turn right around the inner loop of the cloverleaf.
5. The Eads Bridge over the Mississippi River at St. Louis, Missouri. Hingeless arch bridge with clear spans of 520 feet in the center and 502 feet on each side. One of the most remarkable structures of all time. Its construction in 1867-1874 marked the beginning of the use of steel for bridges in the United States and the first important application of pneumatic caissons for deep foundations. Capt. James B. Eads was the designer and superintendent of construction. The bridge is remarkable for its use of alloy steel for the main ribs.
6. Municipal Bridge over the Mississippi River at St. Louis. Double deck railway and highway bridge. Three spans of 668 feet each over the river channel. Boller, Hodge and Baird, Consulting Engineers. Note the Cahokia Power Plant in the background. This bridge has extremely elaborate and complicated railway and highway approaches. It was started about 1912 and has not yet been fully completed.
7. Szechenjo Chain Bridge over the Danube River at Budapest. Sometimes referred to as the world's most beautiful bridge. Tiernay Clarke was the engineer. Note the ornamental towers and entrance, characteristic of European structures. This is an I-bar chain cable suspension bridge. Span 685 feet.
8. Proposed skyscraper 1000 feet high to have been built of cast iron and glass from the Crystal Palace, England, 1851.
9. View of the Chrysler Building, New York. Height, 66 stories, 1044 feet.
10. View of the Empire State Building, New York. Height, 85 stories, 1250 feet.
11. View of the Woolworth Building, New York City. Old Post Office in the foreground. Note the Hudson River piers in the background. Height, 55 stories, 792 feet.
12. Lehigh and Hudson Canal near Easton, Pennsylvania. Enlargement made from photograph taken by Professor J. S. Crandell.
13. Reservoir dam for the City of Baltimore water supply.
14. Aerial view of lake formed by Boulder Dam. The Dam appears in the extreme right and is apparently about one-half inch in length.
15. Aerial view of Michigan Avenue Bridge over Chicago River, Chicago, Illinois. View taken during parade.
16. Aerial view of the Sky Ride and Fair Grounds, Chicago World's Fair, 1933. Michigan Avenue in the background.
17. Ancient Roman Aqueduct at Segovia, Spain.
18. Frances Scott Key Memorial Bridge over the Potomac River at Georgetown, Maryland. Georgetown University in the background.

19. Beechwood Boulevard Bridge, Pittsburgh, Pennsylvania. Received the Phoebe Howland Fowler award for architectural merit. Two-rib, open-spandrel, reinforced-concrete, highway, arch bridge.
20. Tacony-Palmyra Bridge over the Delaware River. Two-hinged tied arch with continuous truss approach spans.
21. Views of the Central Railroad of New Jersey, four-track, railway bridge over Newark Bay, N. J. In the foreground two Waddell vertical lift spans. Longer span, 300 feet. Shorter span 200 feet. This bridge has long plate girder approaches supported on pile piers.
22. Wabash Avenue Bridge over Chicago River, Chicago, Illinois. Open and closed views.
23. Night view taken during the construction of San Francisco-Oakland Bay Bridge. This is the West Bay Crossing. Note the lights on the tops of the derricks on the towers to warn aeroplanes. Over-all length of structure $4\frac{1}{4}$ miles. Center span of suspension bridges 2310 feet, of cantilever bridge 1400 feet.
24. Lake Champlain Bridge. Continuous truss spans on very deep foundations. Fay, Spofford and Thorndike, Designing Engineers.
25. Architect's sketch of the George Washington Bridge over the Hudson River at New York. Four-cable, suspension bridge. As shown in this view there is no stiffening truss. When a new deck is added below the present highway deck, stiffening trusses will be used. Note the open steel braced towers. The original intention was to encase these towers in stone masonry. Main span 3500 feet.
26. Quebec Bridge over the St. Lawrence River near Quebec, Canada, the longest cantilever bridge in the world. Center span of 1800 feet. This bridge illustrates the use of "K" bracing, originally developed for this structure.
27. View of the Empire State Building taken during construction. View is taken looking north toward Grand Central Station. Height, 85 stories, 1250 feet. Chrysler Building in the right background.
28. Map of New York Harbor.
29. Aerial view of Lower Manhattan Island, Empire State Building and Central Park in the background. Note the East River Bridge. Reading from the bottom toward the top on the right hand side may be seen the Brooklyn Bridge, Manhattan Bridge, Williamsburg Bridge, Blackwells Island Bridge and the Hell Gate Arch. This view was taken before the construction of the new Triborough Bridge which has now been constructed on the near side and parallel to Hell Gate Arch. Note the George Washington Bridge in the left background.
30. Aerial view of the Lake Front in Chicago. In the foreground may be seen the Outer Drive.
31. Metropolitan Life Insurance Building in New York. One of the early tall buildings in New York City. Now completely overshadowed by much taller structures.
32. Los Angeles County Hospital, Los Angeles, California. Very beautiful example of modern reinforced concrete building construction.
33. West Chester Park Bridge, Woodlawn Place, New York. Four-rib, reinforced-concrete, highway arch.
34. Highway grade separation near Chicago. Primarily for the separation of grade of two trunk highways. A small amount of transfer traffic is accommodated by the two "Y" curves.
35. Self-anchoring, suspension bridge over the Allegheny River, Pittsburgh, Pennsylvania. Note the Pennsylvania Railroad bridge in the left background. Main span 430 feet.
36. Connecticut Avenue Bridge, Washington, D. C. Open-spandrel barrel-ribbed, reinforced-concrete, highway, arch bridge.
37. St. Johns Suspension Bridge, Portland, Oregon. 1207 feet suspended span. Towers 350 feet high.

38. Suspension bridge over Delaware River between Philadelphia and Camden. Built by the States of Pennsylvania and New Jersey and the cities of Philadelphia and Camden. Ralph Modjeski, Consulting Engineer. Note the Philadelphia Municipal Piers in the foreground. Main span 1750 feet.
39. Deck railroad bridge over the Potomac River, Norfolk and Western R.R. at Shepherdstown, W. Virginia. Typical example of modern riveted truss construction.
40. Combined highway and railway bridge over Kennebec River near Bath, Maine. Highway traffic carried on upper deck; railway traffic on lower deck. Waddell lift span over channel. Waddell and Hardesty, Consulting Engineers.

Second Floor

41. Filter building, City of Detroit water supply, Springwell Station. Note particularly the reinforced concrete roof construction.
42. Large stone sewer, Kansas City, Missouri. Note the sanitary sewer supported on the side of the storm sewer. This is a construction view and the sewer will later be covered over with earth.
43. Construction view of large storm sewer, Kansas City, Missouri. Note the reinforcing steel in place in the foreground, concrete being placed in the middle-ground and a completed section in the background.
44. Aerial view of sewerage treatment works at Elyria, Ohio.
45. North Side Sewage Treatment Plant of the Chicago Sanitary District. World's largest activated sludge plant.
46. Activated sludge plant at Elyria, Ohio, marked by its attractive landscape approach and the greenhouses for the drying of sludge.
47. Sewage Treatment plant at Geneva, Illinois, on the banks of the Fox River. It is another activated sludge plant with greenhouses for drying sludge. Its outstanding characteristics are the landscaping. Located in a high-class valuable property neighborhood.
48. Architect's sketch of proposed 2000 ft. Observation Tower on the lake front, in Chicago. Frank Randall, Engineer.
49. Britannia Tubular Plate Girder Bridge. Double-track, through, plate-girder bridge in which the metal roof and metal floor participate in carrying the load. The piers were originally built for a proposed suspension bridge and later adapted to the tubular plate girder which is still in use. Span 460 feet.
50. Firth O'Forth Bridge, Edinburgh, Scotland. For many years the largest bridge in the world. Main span 1710 feet. The main members are tubular, in sections built up by riveting the plates together in the field.
51. The famous Brooklyn Bridge, designed and built by John Roebling and Sons. Earliest long span bridge built in the United States. The bridge crosses the East River in New York and carries highway and elevated railway traffic between Manhattan and Long Island. Note particularly the stone towers. Span 1596 feet.
52. Reinforced concrete highway bridge on the Pacific Coast Highway. Two-rib, open-spandrel, reinforced-concrete, highway arch.
53. High dam and reinforced concrete highway bridge in the French Alps.
54. High-level, reinforced-concrete, arch, highway bridge near Akron, Ohio. Note particularly the high slender piers.
55. Remains of a cathedral.
56. Cappelin Memorial Bridge over the Mississippi River at Minneapolis. Two-rib, reinforced-concrete, highway arch. This view was taken before the piers of the old bridge had been removed.
57. French King Bridge. Cantilever highway bridge.
58. Coolidge Dam, downstream face. 249 feet high. Note spillway at right and left of the dam. Power house under construction below the dam.
59. Coolidge Dam, upstream face. 249 feet high. This is of the multiple-arch dome type.

60. American Falls Dam, Snake River, Idaho. Concrete gravity spillway with masonry abutments on the right and earth filled abutments on the left. This dam is 80 feet high and 4900 feet long.
61. Black Canyon Diversion Dam on the Boise River in Idaho. Concrete gravity dam with 14 feet by 64 feet drum gates to control the spillway crest.
62. Stony Gorge Dam, California. 142 feet high and 868 feet long. Hollow dam of the slab and buttress (Ambursen) type.
63. Towanda Bridge over Susquehanna River. Double track railway girder bridge on a reversed curve.
64. Umpqua River Bridge in Oregon. C. B. McCullough, Bridge Engineer for the State of Oregon. Two-rib, reinforced-concrete, highway arch.
65. Landwasser Viaduct. Swiss railway arch bridge, reproduced from photograph furnished by Adolph Buhler, Bridge Engineer for the Swiss National Railway.
66. Walnut Lane Bridge, Fairmont Park, near Philadelphia. Open-spandrel, two-rib, plain-concrete arch. Span 233 feet.
67. George Washington Bridge over Hudson River. Heaviest suspension bridge in the world. Main span 3500 feet.
68. Arroyo Seco Bridge, Pasadena, California. Waddell and Harrington, Consulting Engineers. Three-lane, two-rib, open-spandrel highway arch. This is an early example of slender reinforced concrete bridge construction. Built about 1913.
69. Photograph taken during construction of George Washington Bridge over Hudson River at New York. Catwalks used during cable spinning are still in place. Main span 3500 feet.
70. Garabit Viaduct, Truyere, France. Typical of French bridge construction. Two-hinge, sickle arch. Span 541 feet.
71. Manhattan Suspension Bridge over East River, New York. Note four cables with loaded back stays. Double-deck structure. Roadways and elevated tracks on both levels. Note the ornamental iron work at the top of the towers and at the roadway level. Main span 1470 feet.
72. High level viaduct over Passaic River, near Passaic, New Jersey. This is a portion of the famous Newark Meadows Crossing of the State of New Jersey.
73. Hood River Highway Bridge, State of Washington, north of Mt. Hood. Note timber trestle approaches to the main river spans.

Third Floor

74. Kill Van Kull Bridge. Longest arch bridge in the world. Floor is suspended by cables. Span 1652 feet.
75. Ohio River Bridge, Scioto, Ohio. Note particularly the absence of deep sway bracing at the verticals and also the heavy portal bracing between the inclined posts at the center pier. Spans 775 feet.
76. Architect's drawing of the Bayonne, New Jersey arch. Built by the Port of New York Authority. The masonry abutments shown in this view are hollow and surround a steel frame. The stone encasement shown here has not yet been placed. Main span 1675 feet.
77. Jack's Run Bridge, Allegheny County, Pennsylvania. Reinforced concrete arch span of about four hundred feet. Note the struts between the ribs.
78. Reproduction from an etching showing timber centering for a high-rise, reinforced-concrete, arch bridge.
79. Menai Straits Suspension Bridge. Open cable bridge of very early date. Built by Thomas Telford. Span 578 feet.
80. Lincoln Memorial at Washington, D. C.
81. Construction view showing the anchorage of the Golden Gate Bridge. Strauss Engineering Corporation, Designers. Note the catwalks erected ready for cable spinning. Main span 4200 feet.

82. Queensborough Bridge over East River in New York. Continuous cantilever. Gustave Lindenthal was the Designing Engineer. Mr. Lindenthal was one of the most famed bridge engineers in the world. This is a double deck highway and elevated railway bridge. Originally built about 1909 and in 1936 the buckle plate floor was replaced by a modern lightweight steel encased deck. Main span 1182 feet.
83. Tunahannock Viaduct. Double-track, railway, reinforced-concrete, arch spans. Built by the Delaware and Lackawanna Railroad. Lincoln Bush, was the Chief Engineer.
84. Reinforced concrete arch in Switzerland, reproduced from photograph furnished by Adolph Buhler, Bridge Engineer for the Swiss National Railway.
85. Reynolds Highway Bridge over Naugatuck River, Connecticut. Two-rib, three-span, highway arch. Note struts between the ribs.
86. Carquinez Straits Bridge near San Francisco, California. Cantilever bridge on steel towers. Suspended spans erected by hoisting from barges. D. B. Steinman, Consulting Engineer.
87. Waldo-Hancock Bridge over Penobscot River, Maine. Cables are of the rope strand type.
88. High Bridge over Harlem River, New York. Three-hinge, plate-girder, ribbed arch. The present steel span replaces a series of old stone arches. The old stone arches were removed by order of the War Department. Note the George Washington arch in the background.
89. Bear Mountain Bridge over Hudson River about forty miles north of New York. Suspension bridge with stiffening truss. Roadway is carried at the level of the top chord. Note the unstiffened back stays. Main span 1632 feet.
90. Ford Bridge over Mississippi River between Minneapolis and St. Paul. Two-rib, reinforced-concrete, deck, arch spans. Note struts between ribs.
91. Combined highway and railway bridge over Kennebec River near Bath, Maine. Highway traffic carried on upper deck, railway traffic on lower deck. Waddell lift span over channel. Waddell and Hardesty, Consulting Engineers.
92. Rocky Creek Bridge, Cuyahoga County, Ohio. Open-spandrel, reinforced-concrete, highway arch.
93. Merchandise Mart, Chicago, Illinois. Note typical Chicago River bascule in foreground. Largest building in the world.
94. Grand Coulee Reclamation Dam. Note cantilever highway bridge in foreground. One of the piers of this bridge tilted after construction and required special work for righting.
95. Aerial view of Lock and Dam Number One across the Mississippi River at Minneapolis. Ford Bridge in the foreground. Lake St. Bridge in the background. Ford assembly plant at the right.
96. Architect's drawing of the Boulder Dam showing completed power house in the foreground.
97. Boulder Canyon Dam. This 729-ft. dam is nearly twice as high as any other dam.
98. Wilson Dam at Muscle Shoals, Alabama. Note the power house at the far end of the dam.
99. Analysis of Cabin John Bridge, near Washington, D. C.
100. Cabin John Arch near Washington, D. C. Span 220 feet.
101. Goethals Bridge. Plate girder approaches on high concrete piers. Main river span, cantilever. Built by the Port of New York Authority. Waddell and Hardesty, Consulting Engineers.
102. Outerbridge Crossing. Main river span, cantilever with simple truss approaches. Plate girder approaches on each side. Built by the Port of New York Authority. Waddell and Hardesty, Consulting Engineers.
103. Composite picture of high buildings and the Eiffel Tower drawn to scale. Taken from *Popular Science*.
104. Hammerhead Crane, Puget Sound Navy Yard. Used in construction and repair of warships.

Fourth Floor

105. Pittsburgh and Lake Erie Railroad Bridge. Modern cantilever structure with simple approach at the far end. Albert Lucius, Consulting Engineer. Particularly noteworthy because of the rocker bearings for the tower posts.
106. Panoramic view of sewage disposal plant, Bloomington, Illinois.
107. View of the Great Northern Railroad Glacier Station.
108. Grand Canyon Bridge over Colorado River, north of Prescott, Arizona. Span of over 500 feet. View shows closure at center. Notice toggles for adjustment during erection on the right-hand end.
109. Suspension bridge over Delaware River, between Philadelphia and Camden. Built by the States of Pennsylvania and New Jersey and the cities of Philadelphia and Camden. Ralph Modjeski, Consulting Engineer. Note the Philadelphia Municipal Piers in the foreground. Main span 1750 feet.
110. Outerbridge Crossing over Arthur Kill. Main river span is cantilever. The top chord members of the approach spans which seem to connect to the cantilever span are idle members. Note the separate shafts for the piers. These shafts are of reinforced concrete.
111. Southern Pacific Railway Bridge, Suisun Bay, California. Double-track, railroad bridge. Note Waddell lift span over the channel. Note jacking girders at ends of deck truss span. One of the few I-bar bridges built in recent years.
112. Series of construction views of Kansas City Auditorium.
113. Michigan Central Arch over the Niagara River. Double track ballast deck railroad arch. Two-hinged spandrel braced. In the background, combined highway and railway arch owned by Grand Trunk R.R. On the near side of the arch, note the old piers for the Niagara Gorge Cantilever Bridge which was replaced by the arch in the view. The Niagara Gorge Cantilever Bridge replaced the old suspension bridge built by Roebling.
114. View of the completed Goodyear Zeppelin Hangar at Akron. Note particularly the orange peel doors and their framing.
115. View showing erection of roof arches for the Goodyear Zeppelin Hangar at Akron, Ohio.
116. Monongahela River Bridge, Buckhannon and Northern Railroad, Catawba, West Virginia. Center span about 300 feet.
117. Bridge over the Ohio River, at Sciotoville, Ohio. Chesapeake and Ohio Railway. Double-track, continuous-truss span designed for Cooper's E-60. A modern continuous truss of the highest type. The late Gustave Lindenthal, Consulting Engineer. Spans 775 feet.
118. Horton Sphere. Spherical gasoline tank developed by Chicago Bridge and Iron Company.
119. Views in the Junior and Senior Design Rooms. Taken for display at the Chicago World's Fair in 1933.
120. Miscellaneous views of structural steel fabricated by the Riter-Conley Works, subsidiary of McClintic-Marshall (now Bethlehem Steel Fabricating Co.). Note the high construction on the buildings in the central picture and the framing over the storage yards at the left hand and right hand ends.
121. Grain elevator, Vancouver, B. C. Notice the combined highway and railway bridge in the background with a Strauss Bascule movable span. Reinforced-concrete, grain elevator with a timber conveyor trestles.
122. Construction views of the Palmolive Building in Chicago. Holabird and Root, Architects. Note particularly wind bracing shown in the upper views.
123. Elizabeth Bridge over the Danube River at Budapest. Main span 951 feet.
124. Four views of blasting on the Santa Fe Railroad near Kingman, Arizona.